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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, HOAN C

ART UNIT PAPER NUMBER

2871

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/597,780

Applicant(s)

CALLEGARI ET AL.

Examiner

HOAN C. NGUYEN

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 7/12/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-9,11-20,22-32 and 37 is/are pending in the application.
- 4a) Of the above claim(s) 4-8,14-20,22-33 and 37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,9 and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's arguments with respect to Amended claim 1, 9 and new claim 37 based on the amendment filed on July 12, 2004 have been considered but are moot in view of the same ground(s) of rejection. Therefore, **this is Final action**.

Applicant cancelled claims 2-3, 10, 21 and 34-36 and added new claim 37. Claims 4-8, 14-20, 22-33 are withdrawn.

Therefore, only claim 1, 9 and 37 are elected for method of preparing a multi-domain LCD.

Claim Objections

Claims 11-13 are objected to because of the following informalities: Claims 11-13 depend on the canceled claim 10; therefore, examiner should not examine these claims 11-13. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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1. Claims 1, 9 and 37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The feature of "aligning the dry alignment layer using at least TWO methods selected from the group consisting of mechanical mask, photo-resist, UV treatment and ridge and fringe field" does not disclose in the original specification. Specification disclose ONLY: *Each of the multi-domain, dry deposited layers are obtained by a method from ONE of mechanical mask, photo-resist, UV treatment and ridge and fringe field* as following:

- "The present invention relates to multi-domain, wide viewing angle liquid-crystal display having a dry deposited liquid-crystal alignment layer. More particularly, the present invention relates to a method of preparing a dry deposited liquid-crystal alignment layer by one of mechanical mask, photo-resist, UV treatment and ridge and fringe field methods" (page 1 lines 11-17).
- "Each of the multi-domain, dry deposited liquid-crystal alignment layers is obtained by a method selected from one of mechanical mask, photo-resist, UV treatment, and ridge and fringe field" (page 4 lines 13-17).
- "each of the dry deposited liquid-crystal alignment layers is obtained by one of: mechanical mask, photo-resistr UV treatment, and ridge and fringe field methods" (page 5 lines 1-4 and lines 19-22).
- The wide viewing angle liquid-crystal display according to the present invention includes a method preparing a dry deposited liquid-crystal alignment layer by one of the following methods (page 8 line 28 to page 9 line 2):

(1) mechanical mask method;

(2) photo-resist method;

(3) UV treatment and

(4) ridge and fringe field methods

Therefore this feature "aligning the dry alignment layer using at least TWO methods selected from the group consisting of mechanical mask, photo-resist *UV treatment and ridge and fringe field*" considers as NEW SUBJECT MATTER. Applicant needs to resolve this contradiction.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 9 and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Lien et al. (US6493050B1).

In regard to claim 1, Lien et al. teach (Fig. 1A-B, col. 5 line 22 to col. 6 line 19) a method of preparing a multi-domain liquid crystal display comprising the steps of depositing a dry alignment 105 on a substrate and aligning said dry deposited layer using mechanical mask (photolithography mask) and ridge 114 and fringe field due to gap between pixel electrodes 138 (col. 4 lines 38-43 see responses to argument).

In regard to claims 9 and 37, Lien et al. teach (Fig. 9A-B, col. 6 lines 8-10) a multi-domain liquid crystal display comprising

- a bottom substrate 104 having a first surface;

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- a transparent conductive layer (pixel electrodes 138, thin film transistors (not shown) and other display circuitry in bottom substrate, which should consider as the in-plane switching) disposed over said first surface of said bottom substrate.
- a top substrate 102 having a second surface;
- a color filter layer (color filter layer 106 and color filter stacks 112) disposed over a surface of the top substrate;
- a transparent conductive layer 118 disposed over said color filter;
- a first dry deposited layer 107 over said first transparent conductive layer
- a dry deposited layer 107 over said second transparent conductive layer; said second dry deposited layer being spaced adjacent to and facing said first dry deposited layer;
- a plurality of uniformly sized spacer 108 distributing within said space;
- a liquid crystal material 101 disposed in the space therebetween;

wherein

- each of said first dry deposited layer and said second dry deposited layer is divided into a plurality of pixels each having a boundary and at least two domains (col. 6 lines 40-41);
- each of said multi-domain, dry deposited layers is obtained by a method of ridge and fringe field;
- said dry deposited layers are exposed to a particle (ion) beam (col. 6 lines 51-54)
- said particle/ion beam is inherently directed at said dry deposited layers at an adjustable angle with respect to said dry deposited layers.

- said domains of the first and second deposited layers are obtained by mechanical mask (photolithographic mask; col. 4 lines 41-42) according to claim 10.
- said multi-domain, liquid crystal display inherently has a wide view angle (col. 2 lines 12-14).

Response to Arguments

Applicant's arguments filed on July 12, 2004 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are follows:

A. The specification clearly contemplates the use of more than one method for aligning a dry deposited layer as following:

(1) For example, the specification provides the option of combining the methods of using a mechanical mask and methods of using photo-resist masks or layers:

"Preferably, the step of partitioning comprises the step of covering only the first domain areas with a mask, and the step of covering comprises the step of applying a layer of photo-resist." (p. 16, lines 28-31).

(2) Another example is provided, wherein two methods (application of UV treatment, use of a mechanical mask) are concurrently utilized to form desired domain areas having differently aligned domains. This embodiment is described on page 18, wherein the use of a mechanical mask is added as a complement to the UV method:

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"The conductive layers on the substrates are first coated with a dry deposited layer for alignment. The dry deposited layers are then exposed to UV light with a photo or mechanical mask so that the areas which are labeled UV are exposed to UV light, and the areas which labeled NUV are not exposed to UV light. The areas are then treated with ion beam bombardments. The entire dry deposited layer is bombarded by ion beam in a single direction, and **no mask is required for ion beam treatment.**" (p. 18, lines 11-20).

Thus, this combined method combines both the mechanical mask method (use of ionic bombardment and a mask) and the UV method (UV radiation application and ionic bombardment).

B. There is no description in Lien of an additional step of aligning the dry deposited layer. Further, there is no description in Lien of the use of a mechanical or photo mask to align the dry deposited layer.

Examiner's responses to Applicants' ONLY arguments are follows;

(A) Examiner states clearly in 112, 1st paragraph above that "each of the multi-domain, dry deposited layers are obtained by a method from ONE of mechanical mask, photo-resist, UV treatment and ridge and fringe field". **Please see 112, 1st paragraph above for evidences and explain the contradiction:**

(1) In argument, applicant ONLY bases on partial disclose of photo-resist method that a whole disclosure as following (p. 16 lines 25-31):

"The photo-resist method may further include: repeating the covering and removing steps as needed. Preferably, the step partitioning comprises the step of covering only the first domain areas with mask, and the step of covering comprises the step applying a layer of photo-resist."

This is a description of photo-resist method, which inherences using masks and photo resist, is different from using mechanical masks alone without photo resist materials. With this argument, did applicant refer that mechanical mask method and photo-resist method are the same?

(2) Page 18, lines 11-20 in the disclosure gives a description of the UV method, which inherences of using the mask. However, this paragraph discloses: “**no mask is required for ion beam treatment.**” Therefore, **there is no combination of mechanical mask with ion beam treatment** in specification.

(B) Lien discloses liquid crystal pretilt structures in one photolithography mask step to make ridges or slits. The alignment with liquid crystal pretilt structures is generated **ridges**, which is made by **photolithography mask** (mechanical mask). Therefore, the alignment method is used **ridges made by photolithography mask (combination of two methods: ridges and mask)**.

Furthermore, one photolithography mask step is the step of **photo resist method with using mechanical mask** to make ridges for alignment in domains. Therefore, the alignment with ridges is made by **photo resist method with using mechanical mask (combination of two methods: photo resist and mask)**.

Besides, multi-domains alignment in Figs. 1A-B and 9A-B is made by UV treatment or ion beam treatment (col. 6 lines 51-52) with inherently using mechanical

mask. Without mask, multi-domains alignment cannot be generated with UV or ion beam treatment.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571) 272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim H Robert can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HOAN C. NGUYEN
Examiner
Art Unit 2871

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TARIFUR R. CHOWDHURY
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